

NOTE ON THE SHELLS OF *SCHIZODESMA SPENGLERI* LINN.

BY J. D. F. GILCHRIST, M.A., D.Sc., PH.D.

The sands of Muizenberg, though at times so apparently barren and devoid of animal life, prove on closer acquaintance to present many features of interest for zoological study. Frequently after a strong "south-easter" there are cast up many diverse forms of pelagic life. Millions of *Physalias*, the "Portugese Man of War" or "Blue Bottle" as they are called locally, may form a blue band at high-water mark extending for miles along the shore. Among them are other pelagic forms—*Porpita*, *Verella*, *Ianthina*, etc. Over the wet sand may be seen hurrying about the little active mollusc, *Bullia digitalis*, and under it are multitudes of "White Mussel," *Donax serra*, and many burrowing prawns, whose presence is only indicated by the openings of their burrows at the surface. After a north-west wind other forms appear, brought up by the under-current, such as masses of "red bait" and various kinds of shells, prominent amongst which is a large bivalve (*Schizodesma spengleri*).

It is, however, not only the zone between the tide-marks that is of interest, but also the zone above high-water mark, for here the fine sand has been carried back by the wind to form the long line of high sand-dunes, and the heavier shells have been left exposed in profusion.

It is to a peculiarity amongst these that I wish to direct attention. They consist of a variety of different kinds and from various sources. The delicate blue shells of the pelagic *Ianthina* are sometimes found intact, as well as the thin shell of the "toe loeppel," or "teaspoon shell" (*Lima hians*). The stouter shells of other bivalves, such as *Venus verrucosa*, *Dossinia ecoleta*, *Donax serra*, *Lutraria oblonga* and *Macra glabrata* are to be found in abundance, but the commonest is the large bivalve *Schizodesma spengleri*, readily recognised by its large thick valves, with a strong ridge along its outer surface. It is known to fishermen as the "Doed-Mossel." It is a sub-genus of *Macra* and is peculiar to the Cape of Good Hope.

This shell is the largest and one of the stoutest of the shells, and yet, as may be readily noted, it is the one of which most broken fragments are to be seen. Moreover, these fragments are not like those of other shells as a rule, for the fracture appears to be sharper and unweathered. Again, it may be

observed that the fracture is not at the weakest part, the thin edge of the shell, but often passes through the thick part, at or near the hinge where the shell is about 3 mm. in thickness. A further point that is to be noted is that, while many of these shells are broken up into half a dozen or more pieces, others are entirely uninjured.

An obvious and apparently sufficient explanation of this is that the shells have been accidentally crushed by men or animals walking along the sand. The same peculiarity, however, was found in unfrequented parts of the beach, and, moreover, it was found by experiment that the shells are so strong that, on treading on them heavily, they are simply pressed into the underlying sand. Again, other bivalve shells of a more fragile structure were not so damaged. Further, it was observed that fresh shells just cast up by the waves showed the same feature. These were still attached in pairs by the ligamentous hinge and contained the fresh tissue of the animal, or as much of it as had been left by the sea-birds, which readily devour the exposed body of the animal. There were two conditions observed in these shells. Either the two valves were intact, or one was intact, the other being broken into several small pieces. Seldom were both shells broken.

The local name "Doed-Mossel" is probably due to the fact that, though the dead shells are found in abundance, the living animal is not often seen. Sometimes, however, the entire shells and the contained living animal are to be found. The shells are almost as firmly held together as in the living oyster, and cannot be opened without some instrument to rupture or cut the adductor muscles, and yet, in some way, the sea-bird (*Larus dominicanus*) is enabled to get at the animal soon after it is cast up by the waves.

On one occasion a group of these birds was observed on the beach, feeding on the mollusc, and it was obvious that the shells had just been opened, the remaining part of the tissue of the animal being quite fresh. In some cases the two valves were uninjured, and in others one valve only was injured, having been broken in several pieces, which were found close by. On being disturbed the birds made off, but soon after returned. Observed from a distance, they were seen to pick up the shells in their beaks and let them drop on the wet sand from a height of about 20 or 30 feet. It is well known that some birds have the habit of breaking open the hard shells of their prey by such a device, and it was at once surmised that this was the method of procedure in this case, though the shells were broken on one side only, and then often through the thickest part of the shell. Moreover, this apparently did not explain the opening of the shell without any breaking. It was a simple matter, however, to put this to the test. An unopened shell containing the living animal was obtained and was thrown into the air to a height of 20 or 30 feet. It fell on the sharp closed edges of the shell and was quite uninjured. On a repetition of the experiment, however, the shell fell on its side, and this had the effect of breaking

the lower shell into about half a dozen pieces, while the upper shell remained intact. These experiments were repeated, and in one the animal fell on the hinge of the shells, the unexpected result being that the two shells opened widely and remained so as if the animal had been paralysed by the shock.

This, therefore, appears to be sufficient explanation of the condition of the shells so characteristic of those found above high-water mark.